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Exercise and pregnancy: duration of labor stages and Perinea tear rates

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Abstract

Labor is painful, and the onset of it is full of fair for most pregnant women. In addition, women frequently suffer perinea trauma while giving birth. This study aimed to evaluate the effects of exercise on duration of labor and perinea tear rates among pregnant women. 174 women singleton gestation were selected by using a continued method, and assigned in training or a control group. They elected to follow either a light intensity exercise program throughout pregnancy until delivery. Training included 3times/week, 30-45 min. Pregnancy outcomes include of duration of labor and perinea tear were recorded for two groups. Episiotomy rates, overall spontaneous tears and intact perineum rates were similar in the study and control groups (PV=0/19). The rates of intact perineum were significantly higher in the trained group (36.8% vs. 23.8%) and women in the training group had slightly lower rates of second-degree tears (40.2% vs. 53.6%), although, both of these outcomes did not reach statistical significance. There was meaningful difference between the trained and control group in duration of the first stage of labor, but it was not meaningful in duration of the second stage. The training showed neither a protective nor a detrimental significant effect on the occurrence of perinea trauma. However, exercise training during pregnancy is with a shorter labor which creates a good feeling in women.

Keywords: Exercise, pregnancy, labor stages, Perinea tear

1. Introduction

Pregnancy introduces physical and psychological changes into women's lives that may affect their individual perception of quality of life. However, many women feel unattractive and heavy, and may also have difficulty with some movements and in performing routine activities (Granath et al, 2006).The recommendations of the American College of Obstetricians and Gynecologists (2002) states that in the absence of contraindications, pregnant women should be encouraged to engage in regular, moderate intensity physical activity to continue to derive health benefits during their pregnancy as they did prior to their pregnancy a practice that has been shown to be safe and effective during pregnancy (Gavard & Artal, 2008).

Results of studies on the effect of exercise during pregnancy has been different and despite the uncertainties, the literature pertaining to prenatal care, have been suggested proper training of sport and physical activity (Alamzadeh et al 2005, ACOG 2003). Various studies have indicated a series of benefits resulting from exercises by pregnant women such as, for example, control of body weight (Cavalcante et al, 2009), or less need for analgesia (Baciuk et al, 2008). Some studies suggest that the fitness level of the mother can result in a shorter labor, fewer medical

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interventions, and less exhaustion during labor. Being in shape will not decrease the pain, but it definitely will help give you the endurance needed to get through labor (Mikeska et al, 2004). In a study comparing degree of physical conditioning and obstetrical outcome, the well conditioned subjects were found to have shorter labor, less need for obstetrical intervention and fewer signs of fetal compromise (Clapp, 1990).

On the other wise, women frequently suffer perinea trauma while giving birth, particularly during their first delivery. Perinea trauma is defined as any damage to the genitalia during childbirth, either spontaneously or due to an episiotomy. Episiotomy is equivalent in its extent to a spontaneous second-degree perinea tear. Perinea trauma during childbirth is associated with short and long-term morbidity. Perinea damage may result in urinary and fecal incontinence, painful intercourse, persistent perinea pain, and weakness of the pelvic floor musculature (Labreque et al 1999). Episiotomy was proven to be not only ineffective but sometimes even harmful. Strong evidence in support of restricting the use of episiotomy is now well established. Nevertheless, more than half of the women who deliver without an episiotomy still suffer from a tear requiring multilayer closure (Klein, 1988). Interventions to reduce the risk of episiotomy and perinea tears are needed. Furthermore, women who delivered with an intact perineum reported less perinea pain immediately after delivery and better sexual function 3 months postpartum (Labreque,et al 2000). Exercise training in pregnancy period can be a positive contribute on perinea trauma. Some studies showed that performing a perinea massage by the woman or her partner a few weeks prior to the delivery has been advocated to increase elasticity and reduce the risk of perinea trauma from episiotomy or spontaneous tears (Labreque et al 1999, Stamp et al 2001).

We planned this controlled clinical trial in nulli and prime parous women to determine whether exercise training duration pregnancy from the 20^{th} week of gestation until delivery increases the chances of delivering with an intact perineum. As other objectives, we evaluated the effects exercise training duration pregnancy on labor stages length and finally as third objectives, we evaluated the effects exercise training on severity of perinea tearsThis study was conducted in response to an increasing interest in pregnancy exercise and its value by women and physicians in the medical community.

2. Method

This study was performed at Hamedan, Iran, on 174 women who received prenatal care from clinic centers between February and June 2011. Separate ethics approval was obtained from each clinic. The study was a part of larger survey. Women eligible for the study group was recruited mainly during antenatal birth preparation courses started from 20^{th}-30^{th} weeks of gestation. Inclusion criteria included nonathletic healthy pregnant women, nulli or primi Para, without any regular exercise at the past, with a singleton pregnancy who were planned for a vaginal delivery and. If she intended to take part of exercise training program, placed in intervention (exercise training) group and If she intended to take part of exercise training program, placed in comparison group and comparison. Exclusion criteria were included: any medical complicate, recent uterine bleeding, fetal growth retardation, the recent tear curtains, multiple, obese and lean women (BMI of less than 19.8 and more than 26), professional athletes, any problems during the workout, not wanting to continue training during the study, failure to observe discipline in the sport and communication difficulties. Samples were in the range of normal body mass index (19.8-26 kg/m^2), and were similar of age, weight, height, number of pregnancies, and gestational age when study entry. The selection of samples was conducted using continuous sampling method. Participants were provided with an oral and written information form regarding episiotomy and perinea trauma during vaginal delivery.

Data collection tools include information about the consequences of pregnancy; exercise Sheet, exercise booklets, forms, and a newborn weighting scale. The first part of the questionnaire was including some social and demographic characteristics (age, number of pregnancies and deliveries, employment, education, etc.). The later section was included first and second stages length. For each participant also, upon arrival to the delivery room in active labor, two data forms regarding perinea damage postpartum and episiotomy performance were added to the medical file. These forms were filled out immediately postpartum by the midwives assisting in the delivery. For all participants the following additional parameters were also evaluated: gestational age at delivery, birth position, fetal birth weight, and method of delivery (i.e., instrumental vs. spontaneous).

Training program in the study was based on American College of Sports Medicine (ACSM) and U.S. Centers for Disease Control and Prevention (CDC) guidelines for physical activity in adults: at least 30 minutes of moderate activity on most, 3 days of the week (AGOC, 2002). Sheet in relation to exercise duration and frequency and type of

exercise training was conducted, samples ticked the types of training exercises, and exercise duration. Participants performed exercises at their home after a first training by researcher. The samples were asked to stop the practice immediately in case of any problem, and notify the researcher. A section of exercises was perinea massage which started from 34th weeks of pregnancy. The women were taught to place their oiled thumbs inside the posterior vagina (2–3 cm), and to gently press downwards and slide to both sides at the same time. The stretching action was to be maintained until they felt a slight sensation of burning or tingling, at which point they were instructed to hold the pressure for 1 minute until the area turned slightly numb. The women were asked to continue the massage back and forth over the posterior distal half of the vagina for 10 minutes. In order to improve and reinforce compliance and for any questions that might arise, a weekly visit with all participants was made by a researcher. Standard definitions of perinea trauma were used: intact perineum (not requiring suturing); first degree tear (involves skin of the perineum and vaginal mucosa); second degree tear (involves deeper layers of perinea muscle); third degree tear (involves the anus); fourth degree tear (involves the anus and rectal mucosa. Laceration was defined as perinea tear or bruise not requiring suturing. In this study, the researcher visited the comparison group a total of 2 times, at the beginning and end of the study. The pregnancy outcomes recorded in both groups were then compared. The data analysis was done using SPSS software using descriptive and inferential statistics were analyzed.

3. Results

The independent variable in this study was exercise training and dependent variable consisted of the length of labor, and perinea tear. Of the 174 potentially eligible women approached in the antenatal clinic, 3 declined. The main reasons women declined were no reason given (1), woman changed her mind (1), were not interested (1). From 171 final participating in the study, almost samples in intervention group and comparison group had not any occupation, most people educational level in two groups was diploma degree. Mean of study entry in two groups was 22.1% in intervention group and 22.5% of comparison group.

Table 1. length of first and second stages of delivery

The stages and perinea tear	intervention	comparison	P Value
First stage	333.7±82.9	364.7±85.6	P=0.01
Second stage	32±10.7	34.2±8.2	P=0.16
Perinea tear	N (%)		P=0.19
intact perineum	32(36.8)	20(23.8)	
first-degree	19(21.8)	17(20.2)	
second-degree	35(40.2)	45(53.6)	
third-degree	1(1.1)	2(2.4)	
fourth-degree	0(0)	0(0)	

As table 1 reveals, the result of T-test concerning the first stage, showed meaningful relationship between two groups. 24(27.6%) of intervention group had a first stage between 301-360 minuets and 20(23.8%) of comparison group had a first stage between 361-420 minuets. the mean length of the second stage for women in the training group was 31 minutes shorter than in the comparison group ($P<0.05$).To obtain intensity of correlation index between exercise and length of first stage used from Kendall correlation that there was an inverse relationship between length of first stage and exercise (RS=-0.05).The majority of people in the intervention group (46%) had a second stage length between 20–30 minutes whereas 47.6% of comparison group had a second stage length between 31–40 minutes. However, the results showed no meaningful relationship between two groups. Likewise, we found no differences in number of intact perineum, episiotomies, or first and second degree tears (table.1). However, there was a trend towards a reduced risk for outcome of a second degree tear in the training group (table.1). Also there was a trend towards an increased risk for intact perinea in intervention group. One sample of training group and two sample of comparison group had a third degree tear. Birth weight was similar between the groups.

4. Discussion

In our study we did find a meaningful relationship between exercise and the first stage in two groups. However it was not meaningful between exercise and the second stage. It can be due to limited numbers of samples, doing exercises at home without any supervising. In addition women in this study did various kinds of exercises that were adequate to doing during pregnancy and it did not focus on special pelvic exercises. In Stamp et al study in South Australia on 1340 women, Perinea massage in the second stage of labor showed a shorter length of labor, a trend toward fewer third-degree tears of the perineum, and a general lack of harm (Stamp et al, 2001). However, they did massage and stretching of the perineum during the second stage of labour with a water soluble lubricant which may be a good reason to explain the difference. Some studies of exercise during pregnancy showed no difference in gestational length or duration of the first stage of labor (Rice & Fort 1991, Wang & Apgar 1998). Although in our study differences between groups in the length of the second stage was not a hypothesis, the mean length of the second stage for women in the training group was 2.2 minutes shorter than in the comparison group.

The results of the study showed exercise during pregnancy and pre perinea massage has neither a protective nor a detrimental significant effect on the likelihood of delivering with an intact perineum. A slight non-significant benefit was demonstrated in intervention group in increasing intact perineum and reducing second-degree perinea tears. So that, the trial was powered to detect a 13% difference in the likelihood an intact perineum and a 13.4% difference in second tear. However, the likelihood of a first-degree tear increased. In addition, the trial was underpowered to assess the uncommon outcome of third degree tears, and the suggestion of a possible protective effect from the massage may be a chance finding. All these, mentioned trends were not statistically significant.

Earlier studies of perinea massage were largely inconclusive. In the study by Labrecque and co-workers significant benefit was found in the massage group (Labreque et al, 1999), whereas Shipman et al (1997) reported a non-significant effect. Two additional trials (Avery & Van Arsdale 1987, Avery & Burket 1986) had small sample sizes and were not limited to nulliparous women. In a population of 531 primiparous women delivering vaginally, no significant difference between the groups was observed. The authors found no benefit of perinea massage with respect to the incidence of perinea trauma among primiparous women (Bodner-Adler et al, 2002). Stamp et al found no benefit from massage on rates of intact perineum's and trauma, pain, or urinary and sexual outcomes at any assessment point. The trial was powered to detect a 23% difference in the likelihood an intact perineum. Our study agrees with these findings. In a study in Israel on 234 nulli porous women, episiotomy rates, overall spontaneous tears, and intact perineum rates were similar in the study and control groups. Women in the massage group had slightly lower rates of first-degree tears (73.3% vs. 78.9%, P = 0.39) and slightly higher rates of second-degree tears (26.7% vs. 19.3%, P= 0.39), although both of these outcomes did not reach statistical significance. These results imply some protective effect of perinea massage. In addition, the intervention group had more tears in the anterior part of the vagina, which is the only part not directly influenced by the perinea massage (Mei-dan et al, 2008). In another study on 1340 women the trial was underpowered to assess the uncommon outcome of third degree tears, and the suggestion of a possible protective effect from the massage may be a chance finding (Stamp, et al 2001). Despite that in our study finding were like Mei-dan et al and Stamp et al survey, unlike they results, our results showed a less like hood to second tears in the intervention group. The fact that they did only a massage therapy and no various types of exercises especially pelvic muscles reinforce is the probable explanation for the lower rate in this study. However, although perinea massage did not increase the likelihood of an intact perineum statistically, our trial does provide good evidence of lack of harm that it may be of value.

It is important to note the following factors as strength of the study, our trial was randomized, and the women were free to choice the type of exercises among those offered (general strength training, and specific pelvic floor and perinea massage exercises). in addition it was the composition of the exercise training program. We think that women who like to participate in this kind of study are motivated for exercise and thereby that some of the women in the comparison group will do regular exercise training on their own. Such cross-over from comparison group would potentially lead to smaller between-group differences.

In view of these findings, we suggest that more researches conduct on larger samples, and different locations of the country. In our study the second tears and episiotomy mixed in reach to results, so it is recommended that to conduct a survey to find difference between them, after exercises or perinea massage. Also a study limitation should be taken into consideration. In our study massage therapy carried out by the participants. We did not could to supervise exercises during all pregnancy period due to some limitation, it seems supervised exercises creates different results. We performed the various types of exercises, it is recommended to do another's surveys to aim especial exercises on maternal and neonatal outcome. As perinea injury during vaginal birth constitutes some

morbidity, this warrants further research with a larger sample. We conclude that although exercise during pregnancy and perinea massage in the last weeks of pregnancy did not increase the likelihood of an intact perineum, it is probably harmless. Women who wish to perform exercise should not be discouraged but they should be informed that the scientific proof of any possible benefit is still controversial.

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